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PROGRAMME PLANNING

Country and intercountry programmes and projects

ASSISTANCE FOR A GLOBAL PROJECT

A Global Musa Testing Programme (GLO/91/020)

International Network for the Improvement of Banana and Plantain (INIBAP)

Recommendation of the Administrator

Estimated UNDP contribution	$4,810,000
Duration	Three years
Executing agency	OPS in consultation with FAO

I. BACKGROUND

1. Production of cooking banana and plantain for local consumption in the tropics represents about 90 per cent of total production, while production for export is about 10 per cent. Banana and plantain for local consumption are generally grown by small-scale farmers, and are often transported to urban markets. The crop plays a very important role in the economies of many countries in Asia, Africa and Latin America.

2. During the last two decades, black sigatoka (BS) and fusarium wilt disease, have disrupted the banana and plantain cultivation throughout the tropical world. By the early 1980s, BS had spread over most of the Latin American countries. In Africa, BS has now covered the whole tropical area.

In South-East Asia and the Pacific, BS is endemic. Fusarium wilt (a soil-borne fungus) is present in many locations in Latin America and the Caribbean, in East Africa and in Asia. Chemical control of black sigatoka requires frequent treatment and is generally unavailable to small-scale farmers. There is no chemical control for fusarium wilt. As a consequence, the only practical defence from black sigatoka and fusarium wilt disease for small-scale farmers is developing disease-resistant varieties.

3. Because of the diversity on a global scale in host-pathogen-ecology and in fruit quality preference, new varieties need to be evaluated over a wide range of conditions. Current research on banana and plantain is minimal in most producing countries. Many of the earlier research programmes that were initiated during this century were largely discontinued after some years. Genetic improvement of banana and plantain has only recently been initiated and the first promising material has been produced by the Fundación Hondureña de Investigación Agrícola (FHIA), Empresa Brasileira de Pasquisa Agropecuaria, and the International Institute of Tropical Agriculture (IITA), in Honduras, Brazil and Nigeria respectively.

4. INIBAP was invited to join the Consultative Group on International Agricultural Research (CGIAR) as a banana and plantain research and testing network in October 1990. INIBAP differs from most CGIAR centres in that it does not have a large central research facility. Most of INIBAP's work is carried out in national programmes through a global research and testing network using research facilities in both developed and developing countries. This collaboration extends to other international centres such as the International Board for Plant Genetic Resources, and IITA (which also conducts research on banana and plantain and to specialized institutes such as to the Fundación Hondureña de Investigación Agrícola. The specific problems which INIBAP has identified as its initial research priorities are germplasm exchange, evaluation, and control of black sigatoka, banana bunchy top virus and fusarium wilt.

5. A preliminary international musa testing programme was initiated during 1991 with preparatory support from UNDP. Hybrids produced by the Fundación Hondureña de Investigación Agrícola are at present tested in a limited number of representative selection sites in Africa and Latin America for resistance/tolerance to black sigatoka. It is expected that by mid-1992 selected hybrids will be ready for further testing under various ecological conditions. Progress to date includes the following: (a) national breeding programmes have been encouraged to produce new hybrids; (b) requests have been received to have new hybrids evaluated nationally; (c) a general consensus that the international musa testing programme must be developed quickly and on a global scale with participation of all interested countries.

II. THE PROJECT

6. The purpose of the new project is to strengthen a global programme for development and evaluation of new germplasm (hybrids) in order that small-scale farmers can replace susceptible banana and plantain cultivars by

resistant cultivars which also meet local consumers' quality preferences. The project will also increase the capacity of national organizations to carry out appropriate research and testing on local banana and plantain and strengthen local genetic improvement programmes.

7. Specific activities of the project include:

(a) Further development of a global network for the production and testing of new hybrids that are resistant to black sigatoka and fusarium wilt. Initially, this will include the Fundación Hondureña de Investigación Agrícola, Empresa Brasileira de Pasquisa Agropecuaria and the International Institute of Tropical Agriculture;

(b) Confirming the character of any promising hybrids and subjecting them to international phytosanitary and quarantine criteria at the INIBAP transit centre in Belgium. The hybrids will then be propagated and distributed to representative field-testing sites around the globe;

(c) Testing and evaluating the resistance of the hybrids at eight field sites that represent major agro-ecological regions for banana and plantain production in the developing world. This includes Honduras, Costa Rica, Colombia, Nigeria, Cameroon, Burundi, Philippines and Indonesia. Following these selection trials, local evaluation trials will be performed by interested national programmes;

(d) Development of simple, rapid and practical screening techniques for resistance to black sigatoka and fusarium wilt will also be initiated at selected advanced laboratories around the globe. This could include Australia, Belgium, France, Costa Rica and other countries in the developing world;

(e) Intensive training will be offered to participants from developing countries in all phases of the programme at the collaborating research institutions;

(f) Two global meetings of collaborating scientists and representatives of interested countries will be held at appropriate sites in which breeding and field evaluation results will be presented and discussed, recommendations for organizing the next year's activities will be formulated, and special topics of particular relevance to the research and testing will be considered. In addition, visits to banana and plantain research and testing programmes in the country or region will be scheduled;

(g) Collection and maintenance of musa germplasm will be accomplished in the project. Maintenance will be accomplished by the three-four collaborating breeding programmes in Latin America, Africa and Asia, and the International Board of Plant Genetic Resources will be asked to collect in unexplored regions in Myanmar, Viet Nam, Cambodia, certain islands of Indonesia, and other independent island countries of the Pacific.

8. The project will be subject to periodic external reviews and will receive a thorough evaluation at termination. Furthermore, opportunities will be sought to collaborate with other donors, countries and institutions that may wish to associate themselves with this research.

9. The total project cost is $4,810,000. Approximately 13 per cent of this budget is for training; 14 per cent for field evaluation and breeding; 12 per cent for field collection and maintenance of musa germplasm; 40 per cent for global coordination and international meetings, sanitary verification, propagation of hybrid germplasm and distribution by INIBAP; and 20 per cent for research by advanced laboratories on improved screening techniques.

10. The ultimate primary beneficiary of this project will be the small-scale or subsistence farmer, who will gain access to banana and plantain cultivars which are resistant to black sigatoka and fusarium wilt. Preserving biodiversity of banana and plantain and reducing the need for synthetic chemical pesticides are other potential benefits.

11. There are a few national efforts on genetic improvement of banana and plantain, and these will be major participants in the project. It should be noted that the Food and Agriculture Organization of the United Nations (FAO) has been requested by the Intergovernmental Group on Bananas to operate a banana improvement project, and this project has been submitted to the Common Fund for Commodities (CFC) for possible financing. While the INIBAP programme to be entrusted to UNDP only deals with "food bananas" and plantains and not export bananas, an agreement has been prepared by FAO and INIBAP regarding division of responsibilities and collaboration for the activities described in the project proposals submitted to UNDP and CFC.

12. There are several features of the proposal that recommend it for a UNDP global project. Cooking bananas and plantains are a very important staple food in many developing countries, and are often grown in subsistence households by women. The crop is being seriously threatened by two devastating diseases (black sigatoka and fusarium wilt), and immediate action is needed at the global level to collect, evaluate, and develop resistant germplasm. Alternatively, the use of commercial synthetic pesticides, with all the accompanying risks to the environment and health, is the only possible means of protecting the crop. Extensive cooperation between developing countries participating in the research network is central to the project, and some advanced biotechnology may be exploited to strengthen the classical breeding programmes. Thus, the project incorporates the follwing themes that were identified by the thirty-seventh session of the Governing Council: poverty eradication; TCDC; technology for development.

III. RECOMMENDATION OF THE ADMINISTRATOR

13. The Administrator recommends that the Governing Council approve this project.